EXHIBIT 7
Part 1

CRANE ENGINEERING

Failure Analysis
New River MCAS FRP Pipe

Preliminary Report

December 29, 2011

Your Client:	Talon Industries, Inc.
Date of Loss:	August 9, 2011
Crane File No.:	Z7561
Crane Descriptor:	MAT - TALON INDUSTRIES - MCAS JACKSONVILLE

Prepared for:
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SUMMARY AND BACKGROUND

Crane Engineering was retained by Mr. Cal Adams on September 28, 2011 to assist in a matter involving an underground six-inch Fiberglass Reinforced Plastic (FRP) pipe that failed and is said to have spilled JP-5 jet fuel into the ground at the New River Marine Corp Air Station (MCAS) in Jacksonville, North Carolina on, or about August 9, 2011. The fuel leak occurred at a time in which work was being performed by a number of contractors at the New River site to replace the subject Ameron Bondstrand® 2000 FRP pipe. The project management was overseen by AMEC Environment & Infrastructure.

As described in various documents reviewed (see Appendix), jet fuel was discovered on August 9, 2011 in the soil contained within a "pot hole" dug earlier in the day by Talon Industries. Pot holes were dug by Talon for this project using a two-step procedure involving the removal of the top two feet of soil using a Caterpillar 312D L "track hoe" excavator (shown in Figure 1), followed by manual digging using a shovel. The hand digging is said to continue until the FRP pipe (and its marker tape) is located and its coordinates recorded.

Upon discovery of the jet fuel in the soil on August 9, 2011, Talon personnel were directed by AMEC to manually dig by shovel to locate the source of the jet fuel. Testimony revealed that several feet of lateral digging (from the subject pot hole) was required in order to locate the source of the leaking jet fuel. Once uncovered, the source of the leak was revealed to be an approximately 4-inch wide x 14-inch long axial "scrape" on top of the FRP pipe.

It has been alleged that Talon Industries is responsible for the discovered damage to the FRP pipe and the resultant release of JP-5 jet fuel into the environment [Appendix, Item 17], as it was operating hydraulic equipment in close proximity to the discovered damage to the FRP pipe immediately prior to discovery of the fuel leak.

As part of this investigation I conducted a visual inspection of the subject FRP pipe on October 19, 2011 at Materials Design Evaluation, Inc. (MDE) located in Allison Park, Pennsylvania. By the time of my arrival at MDE on October 19, the subject FRP pipe had already been cut in several locations by wet saw. My hosts at MDE (Messrs. Steve Matecka and Bill Julius) had already conducted their (destructive) inspection of the subject FRP pipe and were in the process of preparing a report on the matter. I was given the opportunity to visually examine, measure and photograph the subject pipe. The pipe remained in MDE's possession at that time. Mr. Matecka indicated that the pipe artifact had been received by MDE from the Navy on October 5, 2011. He had no information concerning the prior chain of custody of the pipe or what (if any) prior inspections or cleaning had been performed on the pipe. When requested by me, he was unable to provide any artifact transfer record that documented the actual transfer of the subject pipe into his possession.

Subsequent to my visual inspection at MDE, the pipe artifact (now in four pieces) was transferred to Crane Engineering and received on November 2, 2011. A formal inspection was held at Crane Engineering on November 15, 2011 to which other parties were invited. This inspection involved the careful removal of several coupons from the damaged area of the pipe for further examination by various analytical techniques.

This preliminary report deals with my findings relative to my inspections of the subject FRP pipe as well as the provided documents (see Appendix). The opinions and conclusions expressed in

this report are based on information to date, my inspection of the subject FRP pipe, the provided documents, as well as my training, education and experience. These opinions and conclusions are held to a reasonable degree of engineering certainty. The scientific method formed the framework in which my analysis was conducted and opinions were formed. The materials reviewed in preparation of this report are shown in the Appendix.

INSPECTION AND TESTING

The excavator used by Talon Industries in the course of their work at New River MCAS is shown in the photographs in Figure 1, and the attached bucket is shown in Figure 2.

The subject FRP pipe is shown in Figures 3 and 4, in the condition in which it was first inspected at MDE on October 19, 2011. The pipe artifact, initially about 30 inches in total length, had been cut into three pieces by MDE. The longer piece (about 17 inches long), containing the damaged area, received an additional axial cut to expose the inner surface of the pipe, as shown in Figure 3.

The "scrape" on the subject pipe, shown in Figures 5, 6, 7 and 8 is approximately 14 inches long and is defined by a region in which substantial loss of the fiberglass material had occurred. That is, several layers of the fiberglass winding were missing in this area. The scrape is substantially uniform in width over most of its length, and was measured to be approximately four inches wide, as shown in Figure 5.

The damage to the pipe was found to extend through the wall, and has manifested as cracking and splintering to the "C-Veil" coating that lines the inner diameter of the pipe. This is shown in the right-hand photograph in Figure 6. This damage to the inner pipe surface is consistent with an inward directed force or load applied to the outer surface of the pipe.

Figure 7 provides a photographic comparison of the subject FRP pipe as viewed at MDE on October 19 (left-hand photograph) vs. when it was removed from the ground, at the time repairs were made to the subject pipeline, by APS on August 17, 2011 (right-hand photograph). Clear differences in appearance are noted. The photograph taken at the time the 30-inch damaged pipe segment was removed from the ground shows it to be substantially covered with soil with visible signs of apparent residue from the spilled JP-5 jet fuel. In contrast, when inspected at MDE, the artifact was substantially cleaner, with no visible sign of the fuel residue, and much of the soil missing from the surface of the pipe. Furthermore, no significant odor was detected. No report or documentation has been received concerning this significant change in the artifact. These observations suggest that the artifact had been washed, or otherwise cleaned, without notification to the interested parties.

Portions of the damaged area of the pipe are shown at higher magnification in Figures 8, 9 and 10. The "edges" of the scrape are defined by the abrupt termination of the fiberglass windings that make up the pipe. This sharp termination of the fibers is characteristic of a large shearing force that caused the fibers to break along the two lines that define the sides of the scrape or "trough" in the pipe's surface. This fracture morphology strongly suggests that a well-defined and somewhat sharp object was dragged at high force across the surface of the pipe. In contrast, contact by the straight edge of a 24 inch finishing edge to the surface of the pipe would have likely resulted in a more generalized damage, characterized by a more diffuse distribution of

broken fibers. As shown in Figures 11 and 12 the scrape was found to "trail off" at one end of the damaged area, resulting in minor abrasion and some axial scratching of the outer fibers of the pipe. These witness marks, or scratches, provide evidence the object that caused the scrape was moving in an axial direction, approximately parallel to the pipe.

Four small areas around the damaged portion of the pipe were selected for removal and inspection by microscope, as shown in Figure 13. These four samples were cut dry, using a Dremel tool with an attached abrasive wheel. The sample labeled as "Item 3-2", shown in Figure 14, illustrates the abrupt termination of the glass fibers at the edge of the damaged area. The cross-sectional views of Item 3-2 in Figures 14 and 15 show an approximate 75% reduction in the wall thickness (in the region shown), due to the abraded material (i.e., loss of the fiberglass material as a result of the damage event). The images in Figure 15 were obtained from a polished metallographic mount.

Finally, Item 3-4 (see Figure 13 for its original location) is shown in Figure 16a – c. Upon removal of this sample from the pipe, this coupon fell apart into several pieces along planes of delamination, likely induced by the same damage event that caused the scrape. The surfaces formed by the delamination were examined at higher magnification, as shown in Figures 16a-c, and were found to contain variable amounts of residual soil. Many of the locations in which these patches of soil were found were relatively remote from the open edges of the damaged region. That is, the soil was found between tightly spaced laminates within the thickness of the pipe wall.

ANALYSIS

The observed shape, morphology and features of the scrape described above are consistent with damage induced by hydraulic equipment, as suggested by others [Appendix, Items 4 and 17]. However, as stated above, the shape of the damaged area can only have been made by a well-defined shape that is about 4 inches in width, such as the tooth of an excavator bucket. The teeth on the excavator bucket used by Talon Industries had a width of about 2-½ inches; however, these teeth were covered by a finishing edge that ran the entire width of the bucket, approximately 24 inches, as shown in Figure 2. Moreover, no abrasion witness marks were found to the pipe outer diameter (OD) surface immediately adjacent to the edges of the scrape. Had the FRP pipe been abraded by the 24 inch finishing edge on the Talon bucket, then one might reasonably expect abrasion to the OD surfaces at each side of the scrape. None were observed. These observations effectively rule out the Talon excavator equipment as the source of this damage. Likewise, the damage could not have been caused by a shovel.

Several of the observations and facts further indicate the damage to the subject FRP pipe to have been caused by an event that predates the work being done by AMEC, Talon, and the other contractors. These facts are the following:

1. The damaged area of the subject pipe is missing a substantial amount of fiberglass material (an approximate 4 x 14 inch area). No fiberglass material was reported to have been found during the manual excavation of the damaged area of the FRP pipe.
2. The damaged section of pipe was reported to have been surrounded by a mostly clay backfill, very different from the bed of sand in which the pipeline was originally installed [Appendix, Items 8 and 9]. A sand bed was found in the other areas in which the pot

holes were dug suggesting that excavation work had been done in this area since the original installation of the fuel pipeline in the 1980's.

3. The damaged section of pipe was only found after the horizontal, or lateral, excavation of several feet of undisturbed soil (measured from the original location of the Talon pot hole) [Appendix, Items 1, 8, 9]. It is not possible for soil to have compacted in a few hours, the time between Talon's pot hole digging, and the discovery of the fuel leak. The damage to the FRP pipe was caused by direct contact by heavy machinery, and could not have been caused by the digging that occurred a few feet away by Talon.
4. Soil/sand was found to have infiltrated several of the delaminated fiberglass plies in the damaged area of the pipe (see Figures 16b and 16c). Had the damage been incurred on August 9, 2011 there would not have been sufficient time or cause for the fine particles to have entered and migrated into these narrow spaces. It stands to reason that these soil particles will only be washed into these crevices under the action of rain and settlement over time.

Several pieces of evidence exist that argue against a long-term JP-5 fuel leak from the damaged portion of the FRP pipe. The Michael Baker, Inc. testing conducted in 2010, one year prior to the fuel spill, did not detect signs of a fuel leak in the vicinity [Appendix, Item 2]. Similarly, no extensive "plume" was observed in the soil at the time the damaged portion was excavated [Appendix, Item 17]. Also, the APS report by Mr. Monroe Jacobs [Appendix, Item 4] stated that the appearance of the fractured area showed "signs of a short term exposure to fuel".

Given the considerable evidence indicating the damage to the FRP pipe to be old damage, and the seemingly contradictory evidence suggesting the actual fuel leak to be recent, only one plausible failure scenario can be stated that is fully consistent with all the facts. This failure scenario consists of the following basic events:

A. The subject FRP fuel line was damaged (but not breached) during an excavation that predates the 2011 work to replace the fuel line. That is, the subject "scrape" was created at an earlier time. A mixture of soil and clay was used as backfill to cover the now-damaged pipe by the person(s) performing the earlier work.
B. The 2011 work to replace the aging FRP pipeline begins. Construction equipment is brought to the site including that used by Talon to dig these holes. As part of this operation it is necessary for the construction equipment to drive over the buried pipeline. In its intact condition, the FRP pipe is capable of withstanding the rise in soil pressure resulting from the activity at the surface, as suggested by the calculations in the MDE report [Appendix, Item 10] as well as the reported opinion of Mr. Al Tice [Appendix, Item 17]. However, the mechanical strength of the FRP pipe has been highly compromised by the previously induced damage. In fact, in locations within the scrape the wall thickness of the pipe has been reduced to as little as 25% of its original thickness. It has therefore lost a significant fraction of its original load bearing capacity and is now breached under the weight of the construction equipment and activity at the surface.
C. The damaged, and now breached, FRP pipe begins to leak jet fuel the same day that the pot hole is being dug in the immediate vicinity (several feet away). The jet fuel, under

~100 psi operating pressure, follows the path of least resistance and migrates into the nearby pot hole dug by Talon Industries, rises to the surface, and is detected.

Given this scenario, one that is uniquely consistent with the facts, Talon Industries could not have known about the existence of the damaged underground FRP pipe, nor predicted the series of events that led to the fuel leak and the resultant damage to the environment. Rather, Talon was simply carrying out the work for which it was contracted. Therefore, Talon Industries bears no responsibility for the prior damage to the FRP pipe or the fuel leak that occurred in its presence. Had the FRP pipe not been damaged in a prior event, this incident would not have occurred. To my knowledge no other arguments or failure hypotheses have been put forward by any of the parties that are fully consistent with the facts. Rather, Talon has been implicated solely by the fact that it was merely present at the time of the fuel leak [Appendix, Item 17].

It is possible that other microscopic physical and chemical features may have existed on the pipe artifact at the time it was removed from the ground that would have provided further informative evidence in this matter. However, given the apparent cleaning of the pipe artifact that took place without notification, these features are no longer present and subject to analysis.

CONCLUSIONS

The opinions and conclusions expressed below are based on information to date, my inspection of the subject FRP pipe, as well as my training, education and experience. These opinions and conclusions are held to a reasonable degree of engineering certainty. As additional information becomes available, I reserve the right to supplement or otherwise amend my opinions if warranted by future discovery.

- The subject Fiberglass Reinforced Plastic (FRP) pipe was likely damaged in an event that predates the 2011 work to replace the FRP pipeline at New River MCAS.
- Talon Industries has no causal relationship to this prior damage to the FRP pipe.
- Had the FRP pipe been intact with no damage present, then this fuel spill would not have occurred.

Respectfully submitted,

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

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I hereby certify that this plan, specification, or report was reviewed by me and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Reviewed by,

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JAP/lmm

APPENDIX

Materials Reviewed:

1. MCAS New River FRP Incident Reports (Sitrep) by Albert Garcia, dated August 10, 2011.
2. Baker report "Final 2010 Annual Integrity Testing Report of Approximately 5460 Feet of JP-5 Pipeline at MCAS New River, NC", dated August 12, 2010.
3. Monroe Jacobs letter (Applied Plastics Services, Inc.), dated August 15, 2011
4. Monroe Jacobs letter with opinion, dated August 17, 2011.
5. Letter from Ed Znoj, P.E., AMEC to Becky Miller, Naval Facilities Engineering Service Center regarding Notice of Regulatory Requirement (NORR), dated August 17, 2011.
6. Report prepared by William E. Halsey, P.E., Structural Associates, Inc., dated September 15, 2011.
7. Phone conversation with Mr. Mercado, Ameron (October 6, 2011).
8. Statement by Gabe Galegos (Talon Industries Superintendent), dated October 15, 2011.
9. Statement by Brian Yosay (Talon Industries Equipment Operator), dated October 18, 2011.
10. Report of Steve Matecka, FRP Specialist, MDE, Inc., dated October 25, 2011.
11. Ameron Bondstrand® Guide Specification – Bondstrand 2000 MP Pipe and Fittings (FP695B).
12. Ameron Bondstrand® Product Guide – Bondstrand 2000/2000G and 2416-3416 Glassfiber Reinforced Epoxy (GRE) (FP943-16).
13. Ameron Bondstrand® Guide Specification – Bondstrand 2000 Pipe & Fittings (FP693B).
14. Ameron Bondstrand® Product Data - Bondstrand 2000 Fiberglass Pipe and Fittings (19B FP163D).
15. Ameron Bondstrand® Corrosion Guide – Bondstrand Fiberglass Pipe and Fittings (FP1321).
16. Caterpillar 312 D L Specifications.
17. Final draft report from AMEC, dated August 23, 2011.

Figure 1. Caterpillar 312D L hydraulic excavator (images supplied by Talon Industries).

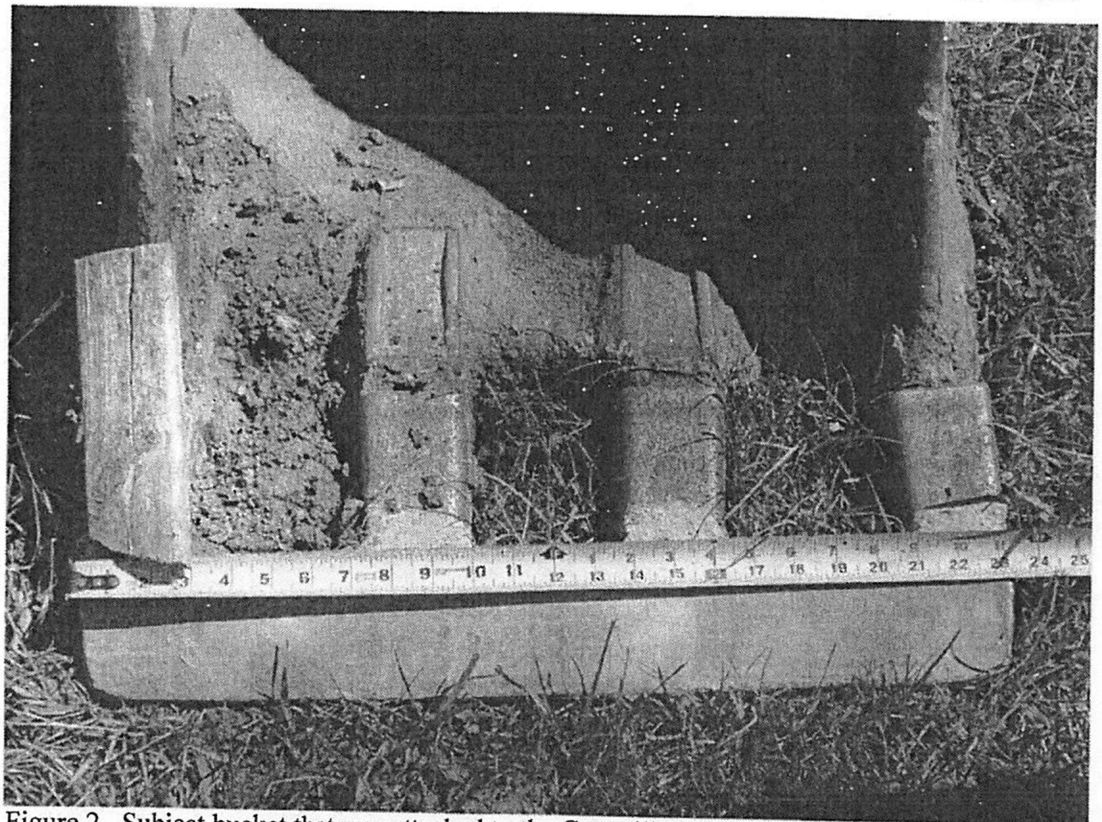

Figure 2. Subject bucket that was attached to the Caterpillar excavator shown in Figure 1 (image supplied by Talon Industries).

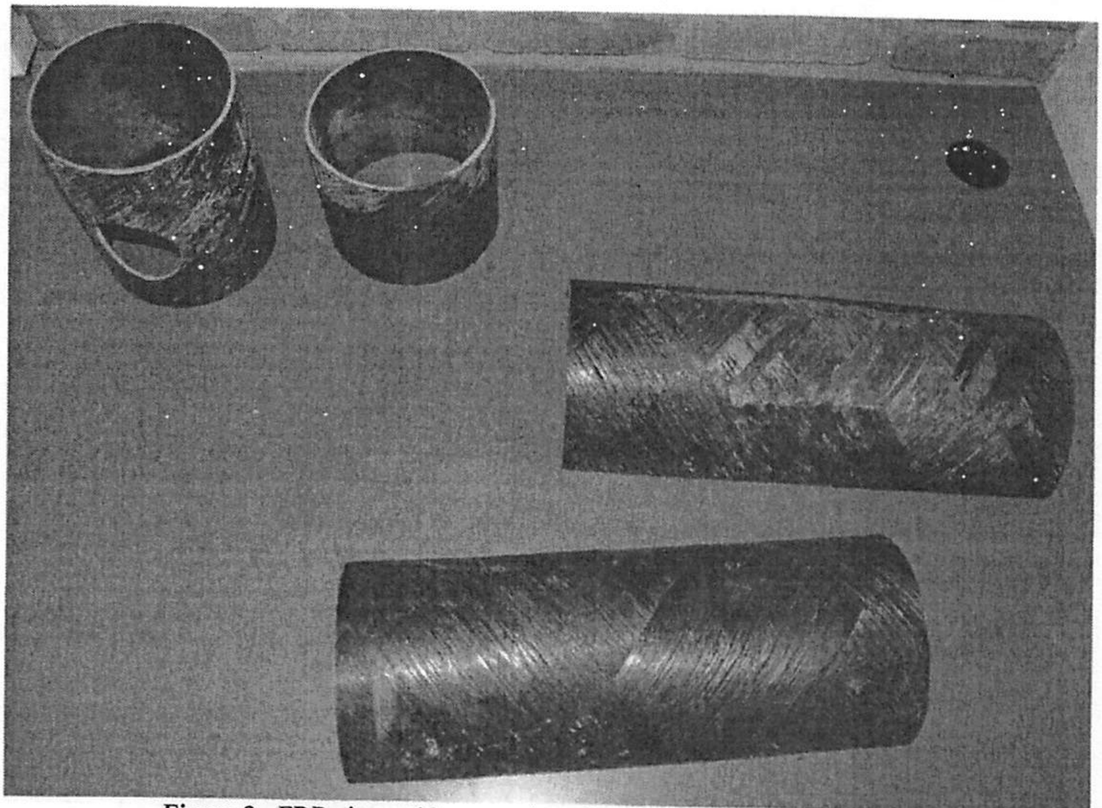

Figure 3. FRP pipe artifacts as viewed on October 19, 2011 at MDE.

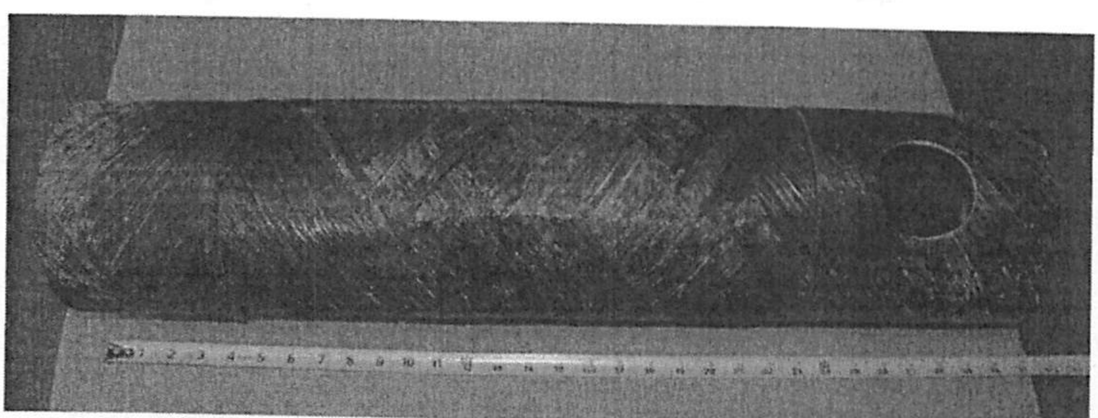

Figure 4. FRP pipe artifacts as viewed on October 19, 2011 at MDE.

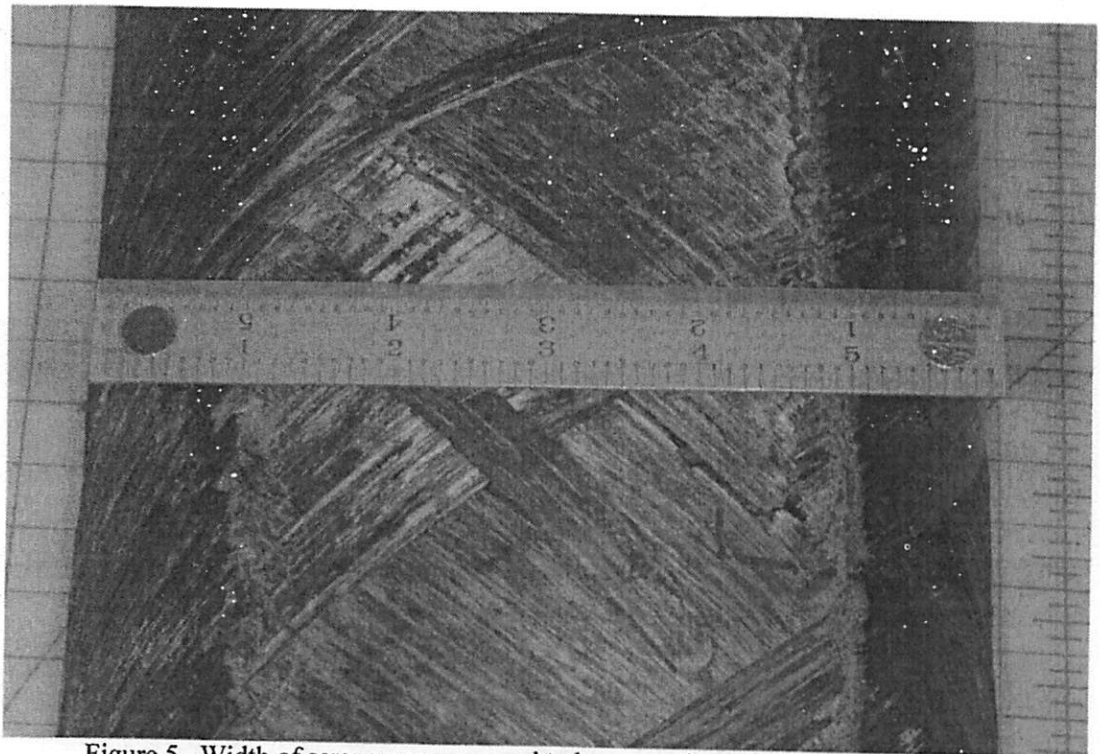

Figure 5. Width of scrape was measured to be approximately four inches in width.

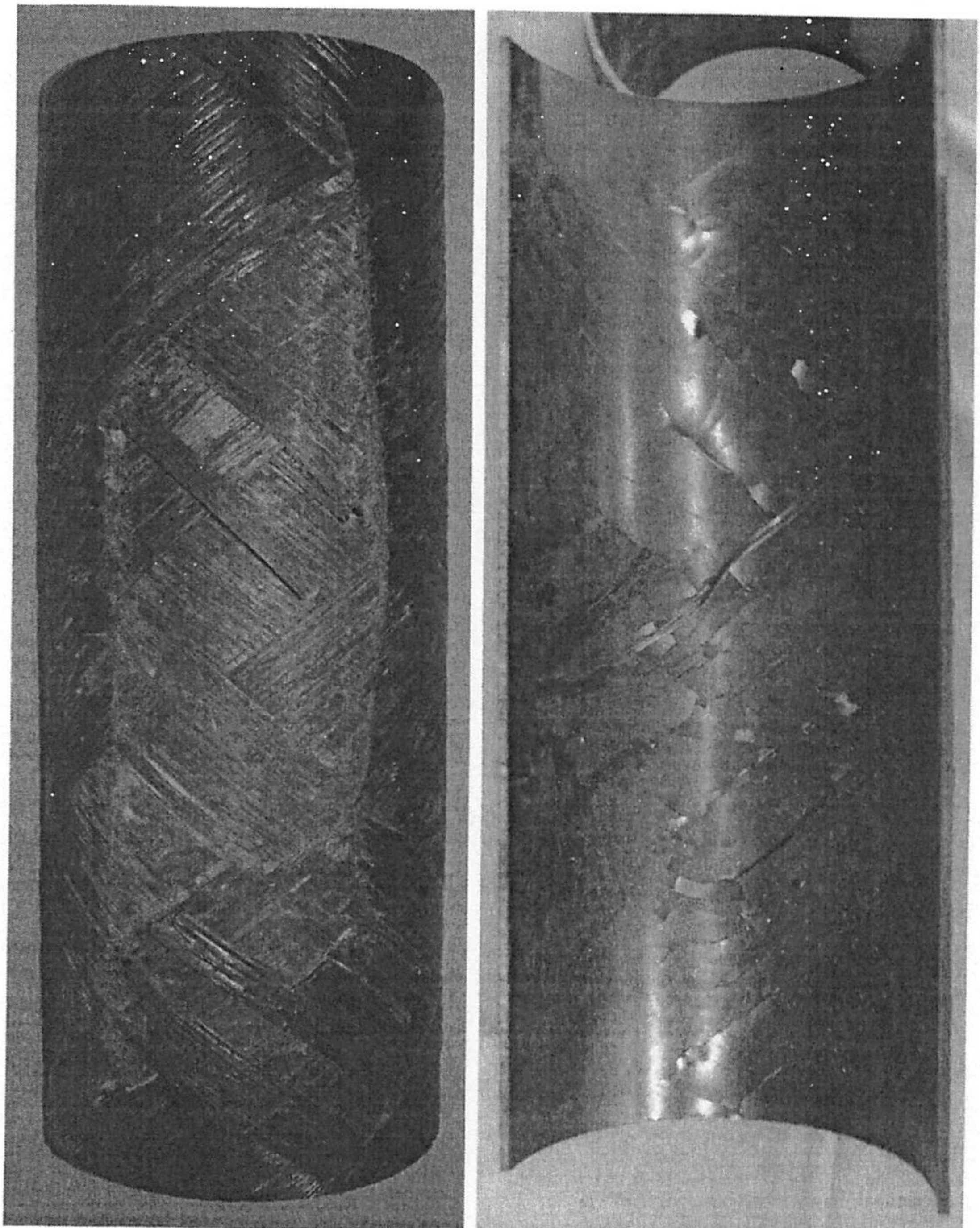

Figure 6. Outer and inner surfaces of pipe at the location of the scrape.

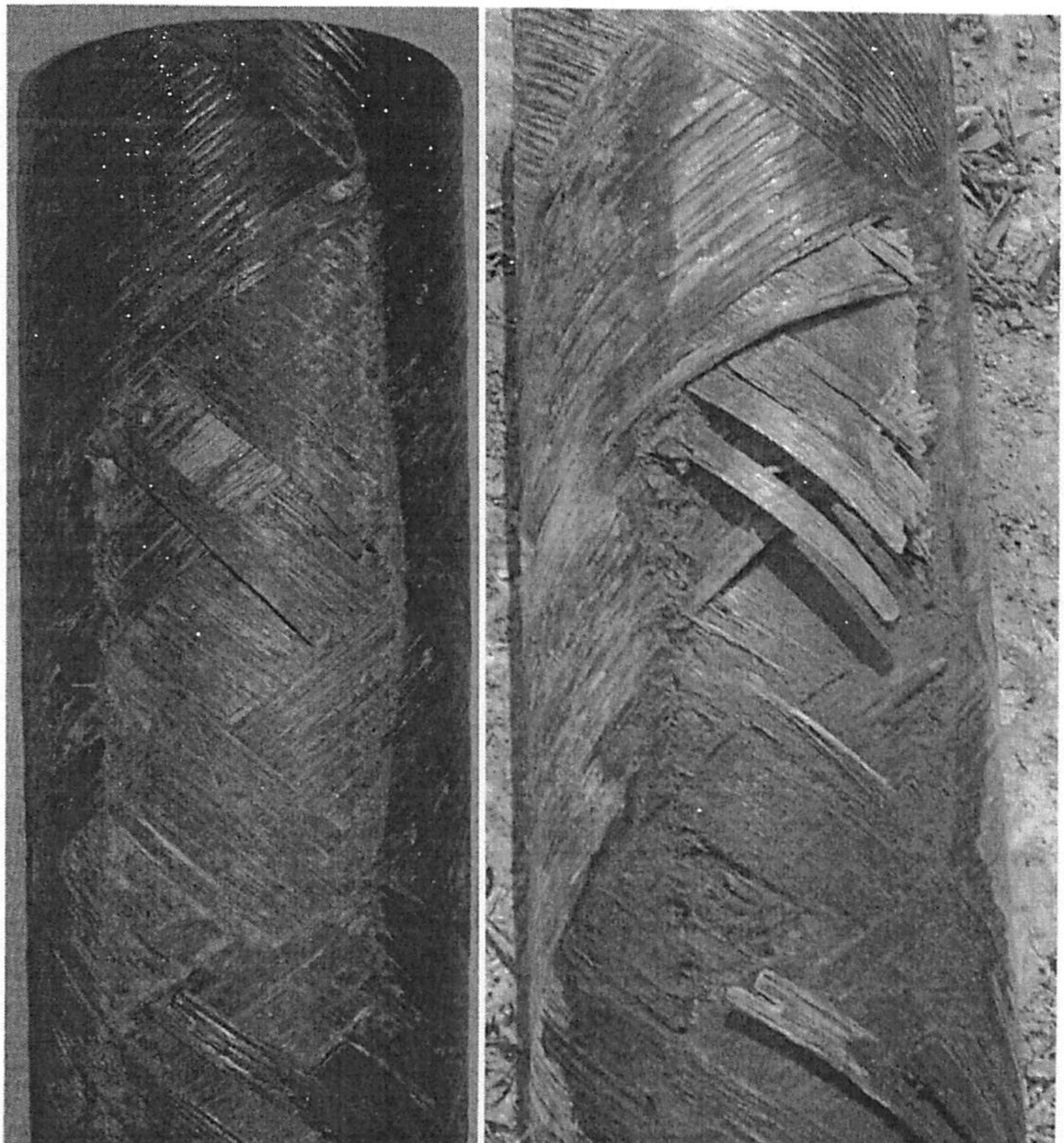

Figure 7. Comparison of the pipe at the time of excavation (right) to its appearance when viewed at MDE (left).